

CLAIMS

I claim:

1. A seated stepper for exercising the lower body comprising:

a frame having opposite sides and a longitudinal axis;

a seat attached to the frame;

first and second foot lever arrangements pivotally coupled together on

5 opposite sides of the frame to move alternately in forward and rearward directions towards forward and rearward positions, and having linearly moveable right and left foot receptacles adapted to be engaged by an exerciser's feet;

first and second motion transfer arrangements mounted on opposite sides of the frame and coupled to the foot lever arrangements for enabling reciprocating

10 movement of one foot lever arrangement relative to the other foot lever arrangement;

a transmission arrangement mounted on the frame and operably connected to the first and second motion transfer arrangements, the transmission arrangement including upper and lower pulley and gear trains in meshing relationship with one another; and

15 a resistance structure mounted to the frame and operably connected to the transmission arrangement for resisting pivotal movement of each foot lever arrangement in one of the forward and rearward directions,

whereby the transmission arrangement enables either of the foot receptacles to be moved and prevents any inertia from the resistance structure from being

20 transferred back to the foot lever arrangements.

2. The stepper of claim 1, wherein each of the first and second motion transfer arrangements includes a member rotatably mounted to the frame, and a swing arm having a forward end pivotally joined to one of the foot lever arrangements, and a rearward end pivotally secured to the rotatable member.

3. The seated stepper of claim 2, wherein one of the rotatable members on one side of the frame is coupled to the transmission arrangement by a main drive belt.

4. The seated stepper of claim 2, wherein each of the rotatable members has a circular configuration and is located beneath the seat.

5. The seated stepper of claim 3, wherein one of the rotatable members is a main drive pulley and the other of the rotatable members is a flywheel.

6. The seated stepper of claim 5, wherein the transmission arrangement includes a rigid gear case holding the upper and lower pulley and gear trains, an upper idler pulley and the lower idler pulley.

7. The seated stepper of claim 6, wherein the upper pulley and gear train includes a rotatable upper clutch shaft having an upper shaft pulley mounted thereon, an upper shaft gear secured thereto and a pair of pillow block bearings secured to the shaft on both sides of the upper shaft gear.

8. The seated stepper of claim 7, wherein the lower pulley and gear train includes a rotatable lower clutch shaft having a lower shaft pulley with an internal one-way clutch mounted to the lower clutch shaft, a lower shaft gear with an internal one-way clutch secured to the lower clutch shaft, a pair of pillow block bearings secured to the lower clutch shaft on both sides of the lower shaft gear, and a brake drive pulley fixed on the lower clutch shaft.

9. The seated stepper of claim 8, wherein the main drive belt is engaged with the main drive pulley, the upper idler pulley, the upper shaft pulley, the lower shaft pulley and the lower idler pulley.

10. The seated stepper of claim 8, wherein the upper shaft gear is constantly engaged with the lower shaft gear.

11. The seated stepper of claim 8, wherein the brake drive pulley is operably connected to the resistance structure by a resistance drive belt.

12. The seated stepper of claim 8, wherein the transmission arrangement is constructed and arranged such that the brake drive pulley rotates in only one direction.

13. The seated stepper of claim 1, wherein the resistance structure is an eddy current brake/generator having a rotating disc.

14. The seated stepper of claim 8 wherein the upper clutch shaft and the lower clutch shaft have longitudinal axes which are disposed generally transverse to the longitudinal axis of the frame.

15. In a seated stepper having a frame with opposite sides, a seat bottom mounted on the frame, first and second foot lever arrangements coupled to the frame to move in forward and rearward linear directions towards forward and rearward positions and resistance structure mounted on the frame for resisting movement of the foot lever arrangements and one of the forward and rearward directions, the improvement comprising:

a pulley and gear transmission means mounted on the frame between the foot lever arrangements and the resistance structure for preventing any inertia from the resistance structure from being fed back to the foot lever arrangements so as to prevent injury to a stepper exerciser.

16. The improvement of claim 15, wherein the foot lever arrangements are pivotally joined to opposite sides of the frame.

17. The improvement of claim 15, wherein the foot lever arrangements are coupled together so that they move in unison.

18. The improvement of claim 15, wherein the transmission arrangement includes an upper pulley and gear train mounted on an upper cylindrical clutch shaft in constant meshing relationship with a lower pulley and gear train secured on a lower cylindrical clutch shaft.

19. The improvement of claim 18, wherein the lower cylindrical clutch shaft includes a lower shaft pulley with an internal one-way clutch and a lower shaft gear with an internal one-way clutch.

20. The improvement of claim 18, wherein a longitudinal axis of the upper cylindrical clutch shaft is parallel to a longitudinal axis of the lower cylindrical clutch shaft.